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XX Abdus Salam Memorial Lecture 2025

Metrology for Quantum Technologies

By

Professor Venu Gopal Achanta
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Prof. Venu Gopal Achanta, is the Director of the CSIR-National Physical Laboratory (CSIR-NPL) in New Delhi. He joined CSIR-NPL as Director on June 21, 2021. He has a PhD in Physics from the Tata Institute of Fundamental Research (TIFR) for his work on exciton dynamics in low-dimensional semiconductors. Additionally, he was awarded a PhD in Electronics Engineering from Tokyo University for his work on the design and demonstration of an ultrafast all-optical switch. Prof. Achanta is a Fellow of the Optica (Optical Society of America) and the INSA (Indian National Science Academy) and an honorary fellow of the Metrology Society of India (MSI). He is elected as a member of the International Committee for Weights and Measures (CIPM) in 2022. He is currently President of Optical Society of India (OSI), and Vice president of Indian Laser Association (ILA). His research interests are in the application of nano photonics to single molecule and single photon spectroscopy through light-matter interaction in non-perturbative regimes.

Abstract of the talk :

150 years ago, the Metre Convention was signed making the metric system a globally accepted system. The International System (SI) of units are redefined in 2019 with each of the units defined in terms of fundamental constants. The implementation of these new SI units is known as the Quantum Metrology. These offer higher precision and do not require prototypes or artefacts for measurements. Such measurements of SI units are useful for emerging quantum technologies including testing the purity of qubits or non-classical light sources and detectors. In this talk, I will introduce quantum metrology and the work being carried out at the national metrology institute (CSIR-NPL) to set these primary standards and discuss opportunities in developing metrological facilities for quantum technologies.

Thursday, 20th February, 2025 at 3PM
Conference Hall, FTK-CIT, JMI